

General Description

The CMSA006N12 uses advanced technology to provide excellent RDS (ON) . This device is suitable to be used as the low side FET general purpose.

Features

- RDS(ON)<5.0mΩ @ VGS=10V
- 100% avalanche tested
- RoHS Compliant
- High Current Capability

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	120	V
V_{GS}	Gate-Source Voltage	±20	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current	120	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current	96	A
I_{DM}	Pulsed Drain Current	360	A
EAS	Single Pulse Avalanche Energy ¹	196	mJ
$P_D@T_C=25^{\circ}C$	Total Power Dissipation	125	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	---	50	°C/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	1.0	°C/W

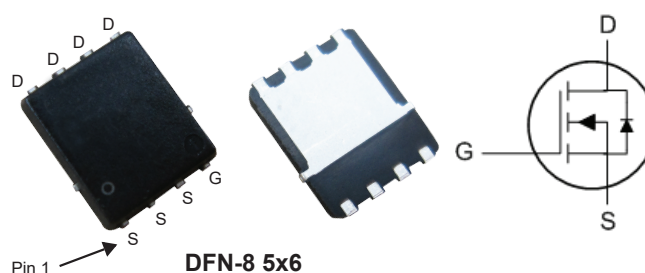
Product Summary

BVDSS	RDS(ON)	ID
120V	5.0mΩ	120A

Applications

- DC/DC Converters in Computing, Servers, and POL
- Isolated DC/DC Converters in Telecom and Industrial

DFN-8 5x6 Pin Configuration



Type	Package	Marking
CMSA006N12	DFN-8 5*6	CMSA006N12

N-Channel Enhancement Mode Field Effect Transistor

Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	120	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=20A$	---	---	5.0	m Ω
		$V_{GS}=4.5V$, $I_D=20A$	---	---	7.0	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=100V$, $V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=10V$, $I_D=7A$	---	26	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	1.5	---	Ω
Q_g	Total Gate Charge	$V_{DS}=50V$, $I_D=20A$ $V_{GS}=10V$	---	60	---	nC
Q_{gs}	Gate-Source Charge		---	7	---	
Q_{gd}	Gate-Drain Charge		---	9	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=50V$, $V_{GS}=10V$, $I_D=20A$ $R_{GEN}=10\Omega$	---	14	---	ns
T_r	Rise Time		---	5	---	
$T_{d(off)}$	Turn-Off Delay Time		---	41	---	
T_f	Fall Time		---	7	---	
C_{iss}	Input Capacitance	$V_{DS}=50V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	3800	---	pF
C_{oss}	Output Capacitance		---	323	---	
C_{rss}	Reverse Transfer Capacitance		---	12	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Diode continuous forward current	$V_G=V_D=0V$, Force Current	---	---	120	A
$I_{S,pulse}$	Diode pulse current		---	---	360	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_F=20A$, $T_J=25^{\circ}\text{C}$	---	---	1	V

Notes:

1.Starting $T_J = 25^{\circ}\text{C}$, $L = 0.5\text{mH}$, $I_D = 28A$, $V_{DD} = 30V$, $V_{GS} = 10V$.

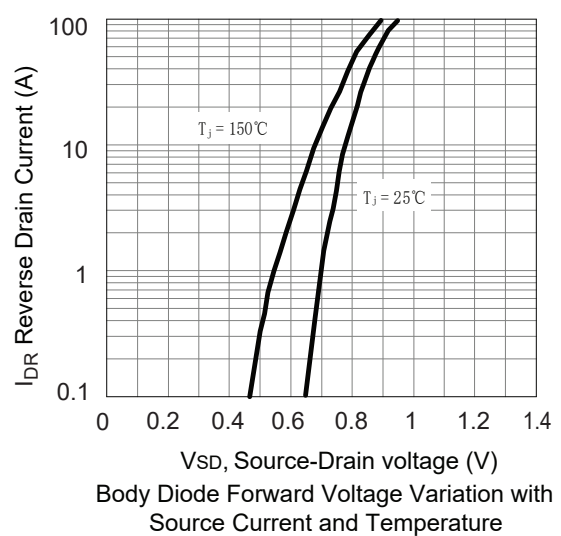
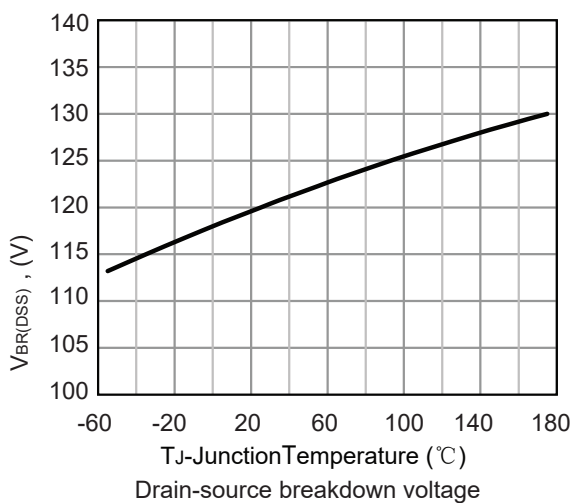
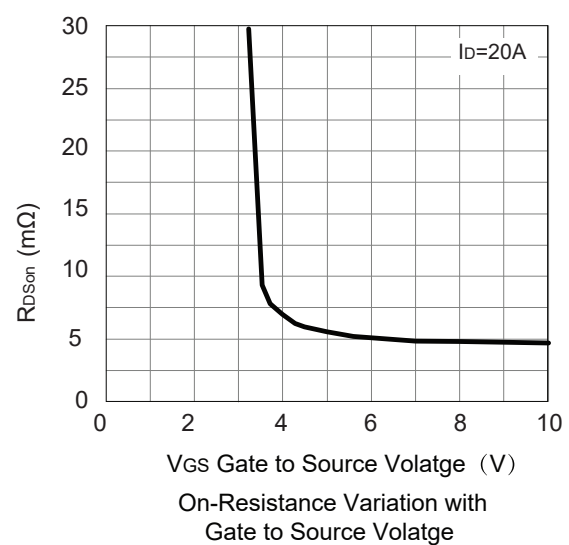
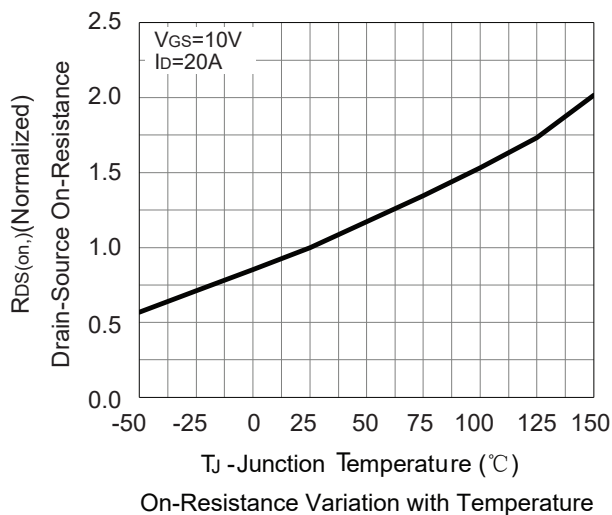
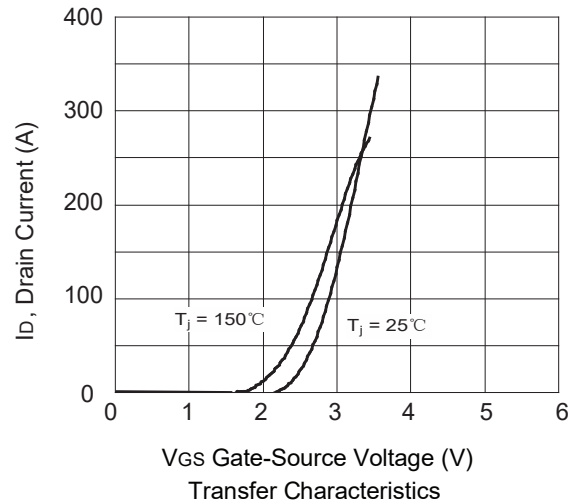
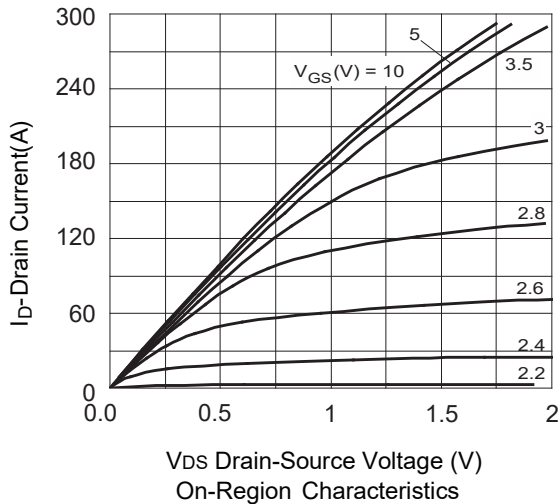
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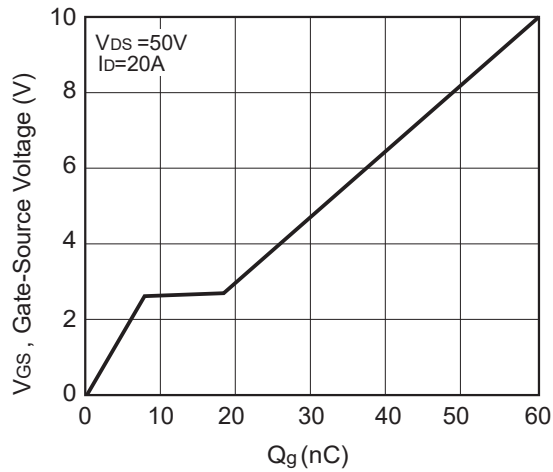
N-Channel Enhancement Mode Field Effect Transistor

Typical Characteristics

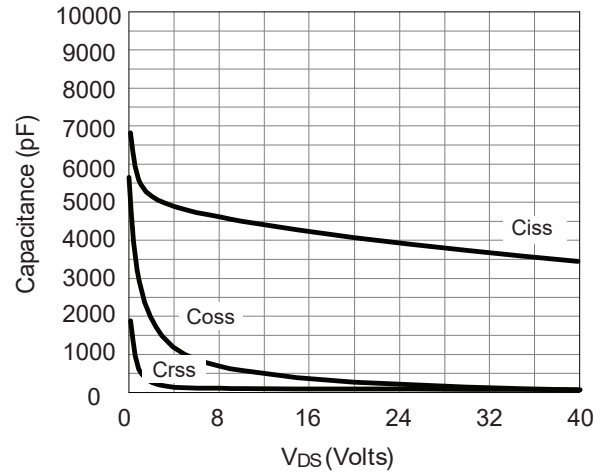


N-Channel Enhancement Mode Field Effect Transistor

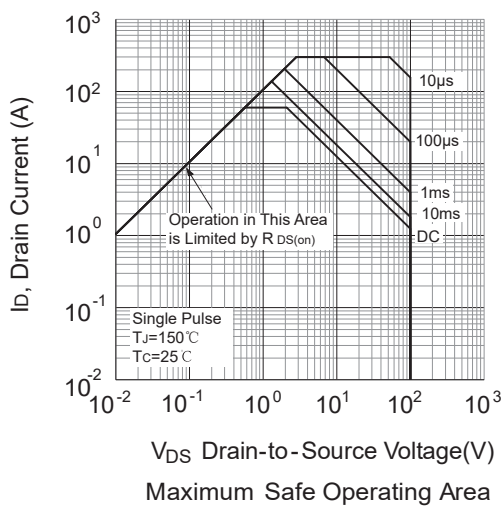
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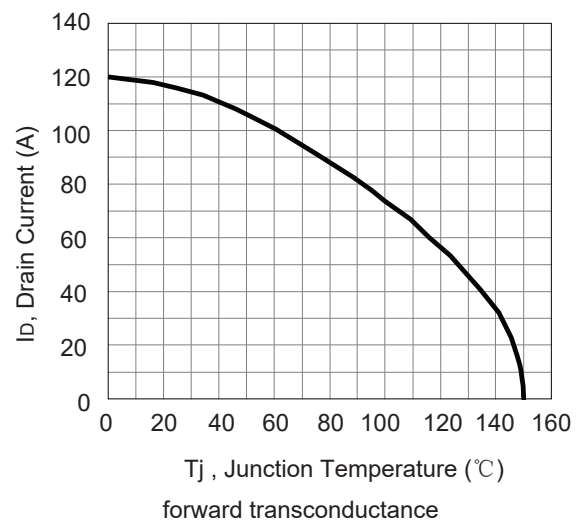
Gate Charge Characteristics



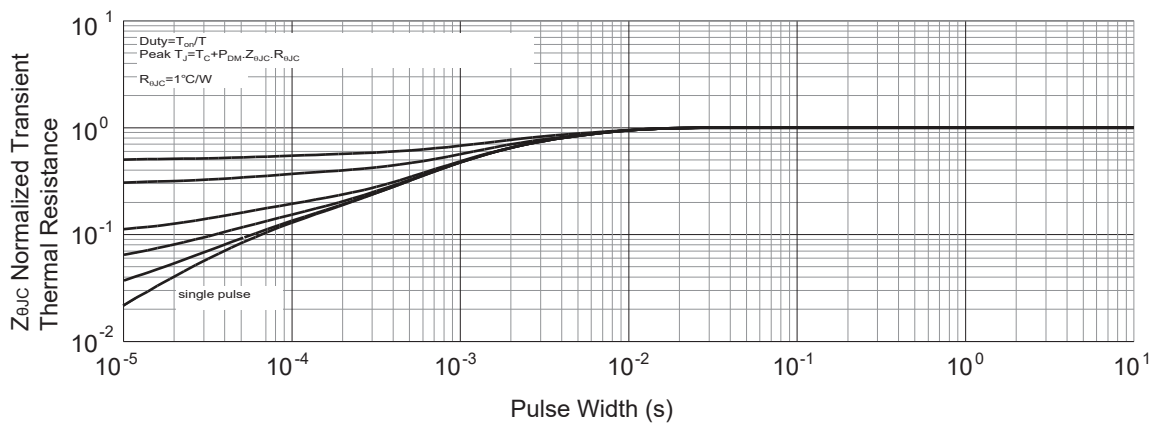
Capacitance Characteristics



Maximum Safe Operating Area



forward transconductance



Normalized Maximum Transient Thermal Impedance, Junction-to-Case